

Australian Gonococcal Surveillance Programme,

1 April to 30 June 2017

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Introduction

The National Neisseria Network (NNN), Australia comprises reference laboratories in each State and Territory that report data on sensitivity to an agreed group of antimicrobial agents for the Australian Gonococcal Surveillance Programme (AGSP). The antibiotics are penicillin, ceftriaxone, azithromycin and ciprofloxacin. These are current or potential agents used for the treatment of gonorrhoea. Azithromycin combined with ceftriaxone is the recommended treatment regimen for gonorrhoea in the majority of Australia. However, there are substantial geographic differences in susceptibility patterns in Australia and in certain remote regions of the Northern Territory and Western Australia gonococcal antimicrobial resistance rates are low, and an oral treatment regimen comprising amoxicillin, probenecid and azithromycin is recommended for the treatment of gonorrhoea. Additional data on other antibiotics are reported in the AGSP Annual Report. The AGSP has a programme-specific quality assurance process.

Results

A summary of the proportion of isolates with decreased susceptibility to ceftriaxone, and the proportion resistant to azithromycin, penicillin, and ciprofloxacin for Quarter 2 2017 are shown in **Table 1**.

Table 1:

State or Territory	Number of isolates tested Q2, 2017	Decreased Susceptibility		Resistance					
		Ceftriaxone MIC $\geq 0.06-0.125$ mg/L		Azithromycin MIC ≥ 1.0 mg/L		Penicillin* MIC ≥ 1.0 mg/L		Ciprofloxacin MIC ≥ 1.0 mg/L	
		n	%	n	%	n	%	n	%
Australian Capital Territory	24	0	0	0	0	4	16.7	3	12.5
New South Wales	656	13	2.0	64	9.8	143	21.8	217	33.1
Queensland	333	4	1.2	23	6.9	82	24.6	77	23.1
South Australia	85	2	2.4	13	15.3	34	40.0	31	36.5
Tasmania	11	0	0	0	0	4	36.4	8	72.7
Victoria	595	5	0.8	95	16.0	197	33.1	196	32.9
Northern Territory Urban & Rural	13	0	0	0	0	2	15.4	2	15.4
Northern Territory Remote	26	0	0	0	0	0	0	0	0
Western Australia Urban & Rural	174	2	1.1	16	9.2	38	21.8	23	13.2
Western Australia Remote	29	0	0	3	10.3	3	10.3	0	0
AUSTRALIA	1946	26	1.3	214	11.0	507	26.1	557	28.6

Table 1: Gonococcal isolates showing decreased susceptibility to ceftriaxone and resistance to azithromycin, penicillin, and ciprofloxacin, Australia, 1 April to 30 June 2017, by State or Territory

* Penicillin resistance includes MIC value of ≥ 1.0 mg/L, or penicillinase production.

In the second quarter of 2017 the proportion of isolates with ceftriaxone decreased susceptibility in Australia was 1.3%, similar to the first quarter of 2017, and lower than the

annual proportion for 2016 (1.7%). ⁽¹⁾ There was one isolate, from South Australia, with an MIC of 0.25mg/L, the highest MIC determined since 2013.

The category of ceftriaxone decreased susceptibility as reported by the AGSP includes the MIC values 0.06 and 0.125 mg/L. The national trend since 2010 is shown in **Table 2**.

Ceftriaxone MIC mg/L	2010	2011	2012	2013	2014	2015	2016	2017 Q1	2017 Q2
0.06	4.80%	3.20%	4.10%	8.20%	4.80%	1.70%	1.65%	1.20%	1.20%
0.125	0.10%	0.10%	0.30%	0.60%	0.60%	0.10%	0.05%	0.00%	0.10%

Table 2: Percentage of gonococcal isolates with decreased susceptibility to ceftriaxone MIC 0.06–0.125 mg/L, Australia, 2010 to 2016, and 1 April to 30 June 2017.

A summary of ceftriaxone decreased susceptibility strains that were multi-drug resistant (MDR), or isolated from extra genital sites (rectal and pharyngeal) for Quarter 2, 2017 by state or territory, and by sex (male/female) are shown in **Table 3**.

Strains with ceftriaxone decreased susceptibility (CRO DS)									
State or Territory	Total	Multi-Drug Resistant		Males		Females		Extra genital sites	
		n	%	n	%	n	%	n	%
Australian Capital Territory	0	0	0	0	0	0	0	0	0
New South Wales	13	1	7.7	9	69	4	31	3	23
Queensland	4	3	75	2	50	1	25	1	25
South Australia	2	2	100	2	100	0	0	1	50
Tasmania	0	0	0	0	0	0	0	0	0
Victoria	5	2	40	3	60	2	40	1	20
Northern Territory Urban & Rural	0	0	0	0	0	0	0	0	0
Northern Territory Remote	0	0	0	0	0	0	0	0	0
Western Australia Urban & Rural	2	1	50	1	50	1	50	0	0
Western Australia Remote	0	0	0	0	0	0	0	0	0
AUSTRALIA	26	9	34.6	17	65.4	8	30.8	6	23.1

Table 3: Percentage of gonococcal isolates with decreased susceptibility to ceftriaxone (MIC 0.06–0.125 mg/L) that showed multiple drug resistance (MDR), isolated from extra genital sites, and by sex, Australia, 1 April to 31 June 2017, by State or Territory.

Azithromycin

In the second quarter of 2017, the proportion of isolates with resistance to azithromycin in Australia was 11.0%, slightly higher than in Quarter 1 2017 (10.3%), more than double the proportion reported nationally for 2016 (5.0%), and more than four times the level reported in Australia for 2013-2015 (2.1%-2.6%).¹ In 2016 the highest incidence of azithromycin resistance was reported from South Australia (19.5% in 2016, compared with 2.8% in 2015), where an outbreak of strains with low level azithromycin was reported.¹ As a result subsequent changes to treatment guidelines were made.² In 2016 increases in azithromycin resistance were also reported from Victoria and urban Western Australia.¹ Globally there have been increasing reports of azithromycin resistance in *Neisseria gonorrhoeae*.³

In quarter 2 2017, most states reported isolates with resistance to azithromycin, with the exception of the Australian Capital Territory, Tasmania, urban and remote Northern Territory and remote Western Australia. The states that reported an increase in the proportion of *N. gonorrhoeae* isolates with resistance to azithromycin when compared with quarter 1 2017 were Queensland, New South Wales, and urban and rural Western Australia. Of concern is the detection of isolates resistant to azithromycin in remote Western Australia. While a decrease, compared with quarter 1 2017, was seen in Victoria and South Australia, the proportion of resistant isolates in those states remains high. Ongoing investigations including typing studies are underway in the jurisdictions.

Dual therapy of ceftriaxone plus azithromycin is the recommended treatment for gonorrhoea as a strategy to temper development of more widespread resistance. Patients with infections in extra genital sites, where the isolate has decreased susceptibility to ceftriaxone, are recommended to have test of cure cultures collected. Continued surveillance to monitor *N. gonorrhoeae* with elevated MIC values, coupled with sentinel site surveillance in high risk populations remains important to inform therapeutic strategies, to identify incursion of resistant strains, and to detect instances of treatment failure.

References

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3. Unemo M. Current and future antimicrobial treatment of gonorrhoea - the rapidly evolving *Neisseria gonorrhoeae* continues to challenge. *BMC infectious diseases*. 2015;15:364